REMARKS

Applicant appreciates the thorough examination of the present application that is reflected in the non-final Official Action of June 1, 2005. Applicant particularly appreciates the Examiner's lengthy analysis of the claims relative to U.S. Patent 6,775,521 to Chen. Applicant also appreciates the Examiner's indication that Claims 3, 4, 7, 12-14, 17, 18, 22-24, 27 and 28 would be allowable if rewritten in independent form. These claims have not been rewritten in independent form, because Applicant respectfully submits that independent Claims 1, 9, 11, 19, 21 and 29 are patentable over Chen for the reasons that now will be described.

Applicant also wishes to note that the specification has been amended herein to update application serial numbers/publication dates and to correct a typographical error.

Independent Claim 1 Is Patentable Over Chen

Independent Claim 1 recites:

> 1. A method of detecting whether a normal burst or a truncated burst is present in a received information signal, the method comprising:
>
> decoding the received information signal to obtain the received information and to produce at least one feature of the received information signal;
>
> preliminarily classifying the received information signal as containing a normal burst or a truncated burst based upon the at least one feature, to obtain a preliminary classification;
>
> cyclic redundancy checking the received information that is decoded; and
>
> further classifying the received information signal as containing a normal burst or a truncated burst based upon the preliminary classification and whether the cyclic redundancy checking is valid, to obtain a further classification.

Accordingly, Claim 1 describes a method of detecting whether a normal burst or a truncated burst is present in a received information signal, by performing a preliminary classification based upon at least one feature of the received information signal and then further classifying the received information signal as containing a normal burst or a truncated burst based on the cyclic redundancy checking.

The Official Action agrees at Page 2, Section 1, that:

> Regarding claim 1, Chen invention is directed to a method for identifying a bad GSM speech frame based on a joint use of four signal quality metrics frame CRC parity check, estimated burst signal-to-noise ratio, estimated frame bit error count, and stealing flag values of frame.
>
> Chen does not expressly teach the steps of *preliminarily classifying the received information signal* and *further classifying the received information signal* as set forth in the application. However, discussions in Chen teachings indicate that there is a preliminary step in which through simulations, it is highly likely that the frame can be determined bad based on certain criteria.

In this regard, Applicant wishes to note that Chen Abstract describes the Chen disclosure as follows:

> A method for identifying a bad GSM speed frame and simultaneously maintaining a frame erasure rate below a specified value. The method is based upon a joint use of four signal quality metrics: (1) frame CRC parity check; (2) estimated burst signal-to-noise ratio; (3) estimated frame bit error count; and (4) stealing flag values of a frame. Another feature includes providing an improved estimated burst signal-to-noise ratio. (Emphasis added.)

Accordingly, Chen does not relate to methods of detecting whether a normal burst or a truncated burst is present in the received information signal, as repeatedly recited in Claim 1. Moreover, Chen jointly uses four signal quality metrics, rather than sequentially using two metrics (feature detection followed by cyclic redundancy checking) as recited in Claim 1.

Notwithstanding this clear teaching of Chen, the Official Action maintains that it would be obvious to use Chen to detect a normal burst or a truncated burst (commonly referred to as DTX mode), and to sequentially perform a preliminary classification using a feature and a further classification using cyclic redundancy checking.

Applicant respectfully submits, however, that it would not be obvious to apply Chen's technique to DTX mode, because Chen specifically describes DTX mode at Column 4, lines 48-65, as follows:

> Accordingly for BFI calculations a stealing flag metric |SFsum| equal to the absolute value of summation of the eight stealing flags is used in the invention as a novel metric for received signal quality. If either a speech frame or control frame was sent, the stealing flag metric typically has a large value. If nothing was sent as in the DTX mode, the stealing flag metric is typically less

> than a specified threshold value, and the current frame should be declared to be bad frame. Simulations verify that if the stealing flag metric is less than a given stealing flag threshold and the EBEC metric is less than an EBEC threshold then it is highly likely that the frame is bad because the receiver cannot distinguish whether speech was sent, signaling data was sent, or the burst is pure noise due to cessation of transmission during DTX mode. Occasionally, even with a small stealing flag metric, the frame may still be a good frame, and that exception is identified when the EBEC metric is larger than the EBEC threshold value. (Emphasis added.)

Thus, Chen itself describes a technique for determining whether or not DTX mode is present. This technique relates to use of a stealing flag metric and appears to be unrelated to the recitations of Claim 1. Thus, it would not be obvious to use Chen's technique of identifying a bad GSM speech frame and simultaneously maintaining a frame erasure rate below a specified value to detect whether a normal burst or a truncated burst is present, since Chen explicitly discloses other techniques for detecting whether a normal or truncated burst is present.

Moreover, even assuming there was some motivation to use Chen's method of identifying a bad GSM speech frame and simultaneously maintaining a frame erasure rate below a specified value in order to detect whether a normal burst or a truncated burst is present, Chen's technique describes the joint or simultaneous use of four signal quality metrics. In sharp contrast, Claim 1 describes a preliminary classification using a feature of the received information signal and then a further classification based on the cyclic redundancy checking. It would not be obvious to modify Chen's joint use of four signal quality metrics to obtain the recitations of Claim 1.

The Official Action appears to rely on the description in Chen, Column 4, lines 56-61:

> Simulations verify that if the stealing flag metric is less than a given stealing flag threshold and the EBEC metric is less than an EBEC threshold then it is highly likely that the frame is bad because the receiver cannot distinguish whether speech was sent, signaling data was sent, or the burst is pure noise due to cessation of transmission during DTX mode.

However, this passage simply does not appear to relate to checking for normal or truncated bursts and does not appear to describe or suggest a preliminary

classification step based upon a feature of the received information, followed by a further classification step based on a cyclic redundancy check.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. *See* M.P.E.P. § 2143. Applicant has shown above that there is no motivation to use Chen's technique of identifying a bad GSM speech frame and simultaneously maintaining a frame erasure rate below a specified value in order to detect whether a normal burst or a truncated burst is present in a received information signal. Indeed, Applicant has shown that Chen describes a DTX mode detection technique that teaches away from use of the claimed invention. Moreover, the above analysis has shown that even if there was some motivation to use Chen's technique for detecting whether a normal burst or a truncated burst is present, Chen's technique jointly uses four signal quality metrics, whereas the claimed invention performs a preliminary classification and then a further classification. For at least these reasons, Applicant respectfully rebuts the *prima facie* case of obviousness that was established by the Examiner, and respectfully submits that Claim 1 is patentable over Chen.

Similar analysis applies to remaining independent Claims 9, 11, 19, 21 and 29. This analysis will not be repeated for the sake of brevity.

Many Of The Dependent Claims Are Separately Patentable

Applicant again appreciates the Examiner's indication that dependent Claims 3, 4, 7, 12-14, 17, 18, 22-24, 27 and 28 would be allowable if rewritten in independent form. Moreover, Applicant respectfully submits that many other of the dependent claims are separately patentable.

In particular, Claim 2 recites:

> 2. A method according to Claim 1 wherein the further classifying is followed by:
>
> still further classifying the received information signal as containing a normal burst or a truncated burst based upon the further classification and at least one transition rule for normal bursts and truncated bursts between the received information signal and a previously received information signal.

In this regard, the Official Action gain quotes Chen Column 4, lines 48-65, reproduced above, and states at Page 4 of the Official Action:

> Regarding claim 2, in column 4, lines 48-65, Chen teaches that the transmit burst can be purely noise due to cessation of transmission during DTX mode. The foregoing teachings correspond to the claims transition rule for normal bursts.

Even assuming, for the sake of argument, that Chen does teach that the transmit burst can be purely noise due to cessation of transmission during DTX mode, this teaching does not describe or suggest a still further classification, i.e., a third level of classification, based upon "at least one transition rule for normal bursts and truncated bursts between the received information signal and a previously received information signal".

As noted in the present application, for example, at Page 9, lines 18-24:

> Figure 2 is a block diagram of other embodiments according to the invention. In these embodiments **200**, a third stage DTX classification block **270** provides still further classification **290** based on at least one transition rule **280** for normal bursts and truncated bursts between the received information signal and a previously received information signal, to obtain a still further classification **290** of the received information signal as containing a normal burst or a truncated burst. An example of a transition rule is a rule that a truncated burst can be included in a transmitted information signal only after comfort noise parameters are transmitted in a previously received information signal. It will be understood that the classification **290** may be further classified if desired. Alternatively, the third stage DTX classification block **290** can provide the final classification upon which a determination is made as to whether a normal or a truncated burst was received.

Transition rules for normal bursts and truncated bursts between the received information signal and a previously received information signal simply are not described or suggested in Chen. Accordingly, Claim 2 is independently patentable. Similar analysis applies to dependent Claims 10, 12, 20, 22 and 30. This analysis will not be repeated for the sake of brevity.

Finally, dependent Claim 8 recites:

> 8. A method according to Claim 2 wherein the at least one transition rule for normal bursts and truncated bursts between the received information signal and a previously received information signal comprises a rule that a truncated burst can be

included in the received information signal only after comfort noise parameters are included in the previously received information signal.

Claim 8 is patentable as depending from patentable Claim 2. Moreover, comfort noise is not described or suggested in Chen. Similar analysis applies to Claim 18. This analysis will not be repeated for the sake of brevity.

Conclusion

Applicant again appreciates the thorough examination and the indicated allowability of many of the dependent claims. Notwithstanding the thorough and detailed examination provided in the Official Action, Applicant has now rebutted the *prima facie* case of obviousness with respect to the independent claims, and has shown that many of the other dependent claims are separately patentable. Accordingly, Applicant respectfully requests withdrawal of the outstanding rejections and allowance of the present application.

Respectfully submitted,

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